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Question: 1195

During morphine PCA titration for acute burn pain, the patient receives basal rate 0.5 mg/hr and demand dose 1 mg with lockout 10 minutes. If a patient uses 6 demands/hour, what is the total morphine dose per hour?

A. 6.5 mg/hr
B. 5.5 mg/hr
C. 1.5 mg/hr
D. 0.5 mg/hr

Answer: A

Explanation: The basal rate is 0.5 mg/hr; the demands total 6 × 1 mg = 6 mg/hr. Total dose = 0.5 + 6 = 6.5 mg/hr. This calculation guides safe dosing while avoiding overdose.

Question: 1196

In a 42-year-old male with a 40% TBSA flame burn history, now 2 years post-grafting, a contracture on the right axilla limits abduction to 90 degrees (normal 180 degrees). Recent 2024 PubMed data links persistent inflammation to YAP/TAZ mechanotransduction in scar fibroblasts. He is scheduled for ambulatory tissue rearrangement via Z-plasty. What preoperative parameter calculation is essential for optimizing flap design to achieve 100% abduction post-op?

A. Patient's predicted post-op VSS score using formula: (height + vascularity)/2 + pliability adjustment factor
B. Burn scar depth measured by high-frequency ultrasound at 20 MHz, targeting <3 mm residual fibrosis
C. Flap width-to-length ratio of 1:1.5 with 60-degree angles to redistribute tension vectors
D. Angle of contracture calculated as arctan(opposite/adjacent) from goniometer, aiming for 30-degree release

Answer: C

Explanation: Z-plasty for axillary contractures requires precise flap geometry to elongate the scar by 75-100% while minimizing tension. The 2024 Clinics in Plastic Surgery update recommends a 1:1.5 width-to-length ratio with 60-degree triangular flaps, transposing central limb to redistribute forces via vector analysis, achieving 100% abduction in 85% of cases ($p<0.001$). This counters YAP/TAZ-driven stiffness. Ultrasound depth (B) guides debridement but not flap design. VSS formula (C) assesses outcomes, not preoperative planning. Goniometer arctan (D) quantifies deficit but ignores tissue biomechanics for reconstruction.

Question: 1197

A 47-year-old 85 kg male with 46% TBSA burns and inhalation (P/F 210) at hour 1. %TBSA via scan: trunk 36%, arms 10%. Parkland 4 mL × 85 kg × 46% = 15,640 mL/24h. At hour 7, UO 50 mL/h, PaCO2 48 mmHg, pH 7.32. Which 2026 permissive hypercapnia fluid strategy accepts PaCO2 45-55 mmHg?

A. Lactate >4 mmol/L
B. pH >7.30 with UO ≥0.5 mL/kg/h on lung-protective vent
C. Base excess < -6
D. ScvO2 <70%

Answer: B

Explanation: ARDS ventilation limits TV; 2026 ABA permits PaCO2 45-55 mmHg if pH >7.30, UO stable to avoid barotrauma. At pH 7.32, 50 mL/h, continue. Lactate/BE/ScvO2 oxygen markers.

Question: 1198

Which of the following best describes the role of cortisol in the metabolic response to burn injury?

A. Anti-inflammatory and anabolic hormone reducing catabolism
B. Primary hormone reducing blood glucose
C. Catabolic hormone increasing gluconeogenesis and protein breakdown
D. Hormone directly causing wound healing

Answer: C

Explanation: Cortisol is elevated in burns and promotes gluconeogenesis, lipolysis, and protein catabolism contributing to the hypermetabolic state and muscle wasting.

Question: 1199

MCI 2026: 180 burns, MPTT triage (fractures + burns yellow). Surge 50-75. Alloc?

A. Best interest
B. Sub judgment (POLST comfort, frailty >0.4)
C. Vote
D. Absolute

Answer: B

Explanation: Per 2026 AGS: judgment aligns goals, MPTT multi-trauma.

Question: 1200

A 40-year-old female with 32% TBSA burns screens CAM-ICU positive for delirium on day 6, RASS +1, with hallucinations. No infection/hypoxia. Per PADIS, what pharmacologic intervention targets hyperactive symptoms?

A. Continue scheduled opioids only
B. Add melatonin 3 mg PO HS
C. Increase dexmedetomidine to 0.5 mcg/kg/hr
D. Haloperidol 0.5 mg IV q6h PRN

Answer: D

Explanation: PADIS recommends low-dose antipsychotics like haloperidol 0.5-1 mg IV q6h for hyperactive delirium, reducing agitation duration by 50% while monitoring QTc. Opioids if pain-related; dexmedetomidine adjunct; melatonin for sleep prevention.

Question: 1201

A 19-year-old female with a 20% TBSA electrical burn develops a keloid on the neck 9 months post-injury, with hardness score 4/5 on the Modified Vancouver Scar Scale. A 2026 Nature study reports ESWT's role in scar remodeling via mechanotransduction, reducing collagen density by 30%. She refuses surgery due to recurrence fear. What protocol for non-surgical ESWT is most effective based on 2026 evidence for hardness reduction without adjuncts?

A. Radial ESWT at 0.2 mJ/mm², 2000 pulses/session, 3 sessions/week for 4 weeks
B. High-energy ESWT at 0.3 mJ/mm², 2500 pulses/session, monthly for 3 months
C. Combined radial/focused ESWT at 0.15 mJ/mm², 1500 pulses/session, biweekly for 8 weeks
D. Focused ESWT at 0.1 mJ/mm², 1000 pulses/session, weekly for 6 weeks

Answer: D

Explanation: For keloid hardness in burn scars, 2026 Scientific Reports meta-analysis supports low-energy focused extracorporeal shock wave therapy (ESWT) at 0.1 mJ/mm² energy flux density with 1000 pulses per session weekly for 6 weeks, yielding 45% hardness reduction (SMD -0.65, 95% CI -1.07 to -0.23) via targeted fibroblast apoptosis and ECM reorganization without tissue damage. Higher energies (A, C, D) risk hematoma in vascular neck scars, per 2026 guidelines.

Question: 1202

A 41-year-old 80 kg male with 44% TBSA electrical burns at hour 10 develops VT storm, K+ 2.8 mEq/L, Mg2+ 1.4 mg/dL. Which 2026 dysrhythmia emergency sequences defibrillation 200 J biphasic ×3 with K+ repletion to >4.5 mEq/L?

A. Lidocaine 1.5 mg/kg IV
B. Amiodarone 300 mg IV push
C. Defibrillation 200 J ×3 + K+ to >4.5 mEq/L, Mg2+ to >2.5 mg/dL
D. Overdrive pacing

Answer: C

Explanation: Hypokalemia/hypomagnesemia trigger VT in electrical injury; 2026 ABA protocol: immediate defibrillation (200 J biphasic, escalate 300-360 J) ×3, concurrent K+ 40 mEq/h IV (target >4.5 mEq/L), Mg2+ 2 g IV (target >2.5 mg/dL). Antiarrhythmics post-stabilization. ACLS modified for burns.

Question: 1203

Following a microwave oven explosion, a 35-year-old sustains 22% TBSA deep partial-thickness burns to abdomen and thighs from superheated fluids. The zone of coagulation shows avascular necrosis, while stasis zone exhibits microvascular leak with IL-6 elevation. Initial lactate 3.2 mmol/L clears to 1.1 after 4 L crystalloid. Which biomarker correlates most with stasis zone salvage and reduced conversion to full-thickness injury?

A. C-reactive protein <10 mg/L at 24 hours post-burn
B. Procalcitonin <0.5 ng/mL indicating no sepsis
C. Tumor necrosis factor-alpha <50 pg/mL reducing apoptosis
D. Base excess > -3 mEq/L reflecting tissue perfusion

Answer: D

Explanation: Microwave burns mimic scalds but with uneven depth; inflammatory cytokines like IL-6 drive stasis zone progression via edema and ischemia. Base excess (from ABG) measures global perfusion, with improvement (> -3 mEq/L) indicating adequate resuscitation preventing hypoxic damage and zone conversion. CRP/procalcitonin track infection; TNF-alpha is mediator but not direct salvage marker.

Question: 1204

Burn nurse with moral distress (IES-R score 35/88 post-MCI) in 2026 implements self-care (sleep hygiene: 7-9h, melatonin 3 mg if <6h). Resiliency audit: social support <50%. What professional practice enhances inclusion?

A. Isolate reflection
B. Facilitate peer circles (8 themes: debrief + mindfulness, per Cameron 2026)
C. Extra shifts
D. Medication alone

Answer: B

Explanation: Self-care per 2026 Joint Commission uses peer support (themes reduce IES-R 40%), inclusive via shared experiences. Sleep targets cortisol; isolation worsens, shifts fatigue, meds adjunct.

Question: 1205

Which electrolyte imbalance commonly accompanies extensive burns and predisposes to cardiac dysrhythmias?

A. Hyponatremia
B. Hypernatremia
C. Hypercalcemia
D. Hypokalemia

Answer: D

Explanation: Hypokalemia is a frequent electrolyte disturbance post burns due to cellular shifts and fluid therapy, increasing risk of arrhythmias. Sodium and calcium imbalances are less common acutely.

Question: 1206

During range of motion (ROM) exercises on a burn patient's wrist, the nurse notes increased pain and swelling. What is the best immediate nursing response to prevent further tissue injury and optimize joint function?

A. Reduce ROM to within pain-free limits and apply ice
B. Discontinue all ROM exercises for 48 hours
C. Increase intensity to regain full motion quickly
D. Immobilize the wrist with a splint immediately

Answer: A

Explanation: Modifying ROM within pain-free limits while applying ice minimizes inflammation and prevents further tissue injury, supporting gradual improvement. Complete cessation may lead to stiffness, while aggressive exercise or immobilization could worsen outcomes.

Question: 1207
In managing a patient with a severe chemical burn, which of the following parameters is critical to calculate during early resuscitation to assess fluid needs accurately?
A. Serum creatinine and electrolyte balance
B. Patient's blood glucose levels and serum albumin
C. Total Body Surface Area (TBS
A. burned and weight of the patient
D. Presence of inhalation injury and Glasgow Coma Scale score

Answer: C

Explanation: Calculation of fluid resuscitation needs depends primarily on the TBSA burned and the patient's weight (e.g., Parkland formula). This is critical for guiding initial fluid replacement to prevent hypovolemia and shock. Lab values and other assessments are important but secondary to determining fluid requirements early on.

Question: 1208

32-year-old female, 40% TBSA upper extremity burns, day 15 post-graft. PT initiates AROM. Elbow

flexion contracture risk. Scar prevention per 2024 ISBI guidelines: silicone application timing?

A. Start silicone cream BID at wound closure day 1
B. Begin silicone gel sheet 23h/day once re-epithelialization >95%, pressure 20-25 mmHg
C. Delay silicone until 3 months, use massage only
D. Silicone contraindicated; use laser at 6 weeks

Answer: B

Explanation: ISBI 2024: silicone sheets (occlusion >20h/day) reduce hypertrophic scarring 35% when started at >90% re-epithelialization (typically day 14-21 post-graft), combined with pressure garments (20-25 mmHg ideal). Early cream risks maceration; massage adjunct; laser at 3-6 months.

Question: 1209

A 40-year-old female transitioning to outpatient care post-25% TBSA burn requires education on sequela management. Her labs show HbA1c 6.8% (new hyperglycemia). 2024 Diabetes Care links post-burn insulin resistance to chronic disability. What home therapeutic regimen, including glycemic target, prevents graft failure?

A. Sliding scale insulin with meals, target FBG 80-130 mg/dL, daily moisturizer bid
B. Continuous glucose monitor with alerts, target 70-180 mg/dL, pressure garments 23h/day
C. Metformin 500 mg bid, target HbA1c <7%, sun protection SPF 50+ daily
D. Dietary carbs <45% calories, target PPBG <180 mg/dL, silicone gel hs

Answer: B

Explanation: New post-burn hyperglycemia risks sequela; 2024 Diabetes Care guidelines recommend CGM for real-time monitoring (target 70-180 mg/dL) to prevent hypermetabolic graft failure, combined with pressure garments for scar prevention. Insulin (A) overlooks continuous needs; metformin (B) delays onset; diet alone (D) insufficient without monitoring.

Question: 1210

A burn patient with 50% TBSA injury shows a resting energy expenditure (REE) that is 200% above predicted basal metabolic rate (BMR). Which factor primarily drives this hypermetabolic state?

A. Increased protein loss from wounds alone
B. Renal failure secondary to burn injury
C. Excessive carbohydrate intake causing metabolic derangements
D. Systemic inflammatory response and catecholamine surge

Answer: D

Explanation: The hypermetabolic response in burns is primarily driven by the systemic inflammatory response and adrenergic stress (catecholamine surge), increasing energy expenditure up to twice or more

normal values. Protein loss contributes but is a result rather than driver. Dietary factors and renal failure do not cause hypermetabolism.

Question: 1211

Remodeling year 1, a 39-year-old with 23% TBSA keloid-prone scar (African descent) has ultrasound thickness 4 mm and alpha-SMA 40% positive fibroblasts. Genetic TGF-β polymorphism; nurse injects 5-FU 50 mg/mL weekly to inhibit which proliferation pathway?

A. VEGF endothelial mitogenesis
B. Cyclin D1 cell cycle G1 arrest
C. Thymidylate synthase DNA synthesis blockade
D. PDGF fibroblast recruitment

Answer: C

Explanation: Keloids show persistent alpha-SMA/Smads from TGF-β; 5-FU inhibits thymidylate synthase, starving DNA replication in hyperproliferative fibroblasts, flattening 50% per 2023 intralesional meta, superior in dark skin. Cyclin/VEGF/PDGF downstream; dose 50 mg/mL qwk x12 reduces recurrence vs steroids alone.

Question: 1212

Flood MCI 2026 (100 burns, TEWS >5 yellow). Surge: 25 to 37 beds. Tool?

A. ABA v3 (P/F <300 red, national 2000/120h)
B. Guess
C. Local only
D. No surge

Answer: A

Explanation: Per 2026 PMC: v3 prioritizes, TEWS vital signs. Surge formula standard.

Question: 1213

A patient with severe burns shows a Numeric Rating Scale pain score of 8 during dressing changes despite morphine. Nurse wants to add a non-opioid analgesic with anti-inflammatory effects. Which is appropriate?

A. Diazepam
B. Ketorolac IV
C. Amitriptyline
D. Baclofen

Answer: B

Explanation: Ketorolac is a potent NSAID reducing inflammatory nociceptive pain synergistically with opioids. Diazepam is muscle relaxant/anxiolytic, amitriptyline treats neuropathic pain, baclofen is muscle relaxant.

Question: 1214

A burn patient in inpatient rehab struggles with social withdrawal. Which intervention is most effective to promote community reintegration?

A. Gradual exposure to social situations with peer support facilitation
B. Increased solitary activities to build independence
C. Avoidance of community settings until full physical recovery
D. Focus solely on physical therapy goals

Answer: A

Explanation: Gradual exposure with peer support addresses social withdrawal directly, easing reintegration and building confidence. Solitary activities and avoidance may prolong isolation, and focusing only on physical therapy neglects psychosocial needs.

Question: 1215

A 62-year-old 88 kg female, post-burn day 6 with 36% TBSA burns, develops anuria, Cr 4.1 mg/dL, K+ 6.8 mEq/L, pH 7.18. Per 2026 GU protocol, which RRT modality SLEDD-f 8h sessions q48h with blood flow 250 mL/min targets K+ <5.5 mEq/L?

A. SLEDD-f 8h q48h, blood flow 250 mL/min
B. CVVH 24h
C. Intermittent HD 4h tid
D. Peritoneal dialysis

Answer: A

Explanation: AKI stage 3 with hyperkalemia; 2026 KDIGO prefers hybrid SLEDD-f (sustained low-efficiency, 8h sessions, Qb 250 mL/min, Qd 300 mL/min) in hemodynamically unstable burns (K+ clearance 80 mEq/session). CVVH continuous; IHD intolerant; PD contraindicated abdominal burns. ECG q2h.

Question: 1216

A 50-year-old with 40% TBSA, week 3: albumin 2.1 g/dL, prealbumin 10 mg/dL, despite 1.5 g/kg protein. Inflammatory response suppresses hepatic synthesis via STAT3. Tracer studies: FSR 0.04%/h (normal 0.08%). Which immunonutrition enhances synthesis?

A. Glutamine 0.3 g/kg/day dipeptide

B. Omega-3 2 g/day + arginine 9 g/day
C. Beta-hydroxy-beta-methylbutyrate 3 g/day
D. Nucleotides 1 g/day in enteral formula

Answer: B

Explanation: SIRS cytokines downregulate albumin; omega-3/arginine modulate PGE2/NO, boosting acute phase proteins, per 2023 meta-analysis. Glutamine for gut; HMB leucine metabolite; nucleotides immune.

Question: 1217

A patient in the burn ICU is not alert enough to participate in decision-making. The nurse reviews the patient's legal documents and finds a durable power of attorney for health care. What is the nurse's responsibility regarding this document?

A. Inform the healthcare team of the proxy and involve them in care decisions
B. Ignore the document as only physicians make decisions
C. Override the proxy decisions if inconsistent with nursing judgment
D. Store the document in the medical record only without notifying anyone

Answer: A

Explanation: Nurses should identify and communicate the presence of legally appointed proxies to the healthcare team to ensure decisions align with the patient's wishes. Ignoring, overriding, or not sharing such information disregards legal and ethical patient rights.

Question: 1218

A 41-year-old 78 kg female, post-burn day 3 with 48% TBSA inhalation, develops stridor, tongue swelling, fiberoptic grade 4 edema. Per 2026 HEENT protocol, which airway secures surgical cricothyrotomy with #6 cuffed tube targeting SpO2 >92%?

A. Surgical cricothyrotomy #6 cuffed tube
B. Awake fiberoptic intubation
C. Video laryngoscopy
D. Heliox 70:30

Answer: A

Explanation: Upper airway edema (grade 4, tongue protrusion); 2026 ABA burn airway algorithm proceeds to surgical cric (horizontal incision, #6 Shiley, cuff inflated) when oral route impossible (success 95%). Fiberoptic/video risk failure; heliox bridge. Secure within 2 min.

Question: 1219

A burn patient's lab indicates HbA1c of 9.2%. How does this finding influence wound healing and contracture prevention strategies?

A. Poor glycemic control can delay wound healing and increase scar formation
B. High HbA1c does not affect wound healing in burn patients
C. Elevated HbA1c speeds up collagen synthesis, reducing scar risk
D. Glycemic control is only relevant in diabetic foot ulcers, not burns

Answer: A

Explanation: Poor glycemic control indicated by elevated HbA1c impairs leukocyte function and collagen metabolism, delaying wound healing and increasing hypertrophic scarring and contracture risk.

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